**West Nile virus and other arboviral activity -- United States, 2014**
Provisional data reported to ArboNET
Tuesday, September 23, 2014

This update from the CDC Arboviral Disease Branch includes provisional data reported to ArboNET for **January 1 – September 23, 2014** for nationally notifiable arboviruses other than dengue. Additional resources for ArboNET and arboviral diseases are provided on page 10.

West Nile virus (WNV) activity in 2014

As of September 23rd, 713 counties from 46 states and the District of Columbia have reported WNV activity to ArboNET for 2014, including 40 states and the District of Columbia with reported WNV human infections (i.e., disease cases or viremic blood donors) and 6 additional states with reported WNV activity in non-human species only (i.e., veterinary cases, mosquito pools, dead birds, or sentinel animals) **[Figure 1]**.

Figure 1. West Nile virus (WNV) activity reported to ArboNET, by state — United States, 2014 (as of September 23, 2014)

- WNV human infections*
- Non-human WNV activity†
- No WNV activity
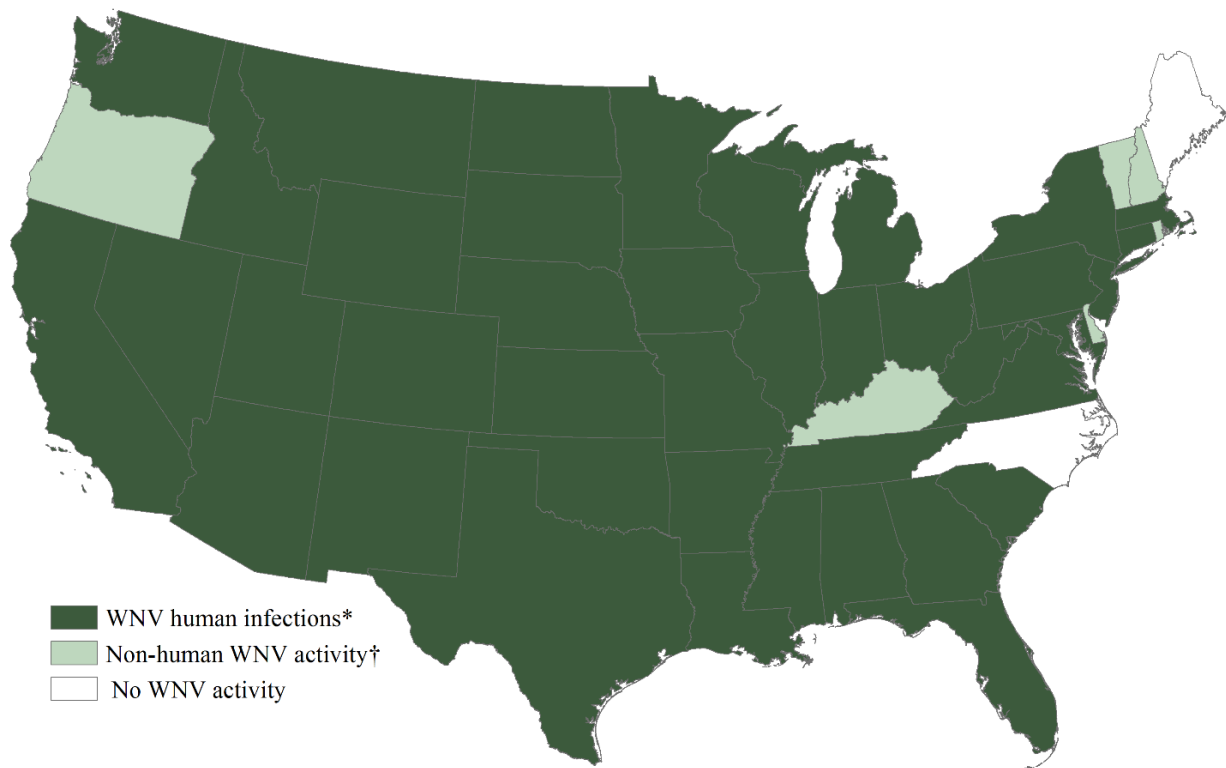
*WNV human disease cases or presumptive viremic blood donors. Presumptive viremic blood donors have a positive screening test which has not necessarily been confirmed.

†WNV veterinary disease cases, or infections in mosquitoes, birds, or sentinel animals

WNV human infections reported for 2014
Reported WNV disease cases
To date, a total of 979 human cases of WNV disease have been reported from 307 counties in 39 states and the District of Columbia [Table 1]. Dates of illness onset for cases ranged from January–September [Figure 2].

Of all WNV disease cases reported, 435 (44%) were classified as non-neuroinvasive disease and 544 (56%) were classified as neuroinvasive disease (e.g., meningitis, encephalitis, acute flaccid paralysis) [Figure 3]. Additional demographic and clinical characteristics of reported cases are provided [Table 7].

Presumptive viremic donors (PVDs)
To date, a total of 202 WNV presumptive viremic blood donors have been reported from 26 states [Table 1]. Of these, 23 (11%) developed clinical illness.

Table 1. West Nile virus infections in humans reported to ArboNET, 2014

State	Human disease cases reported to CDC*				Presumptive viremic blood donors
	Neuroinvasive	Non-neuroinvasive	Total	Deaths	
Alabama	0	1	1	1	3
Arizona	26	5	31	5	6
Arkansas	3	1	4	0	0
California	200	110	310	10	51
Colorado	31	48	79	2	6
Connecticut	2	1	3	0	3
District of Columbia	1	1	2	0	0
Florida	4	1	5	0	2
Georgia	8	0	8	0	0
Idaho	5	11	16	0	0
Illinois	8	5	13	0	0
Indiana	3	0	3	0	0
Iowa	3	8	11	0	3
Kansas	2	14	16	0	2
Louisiana	48	39	87	5	14
Maryland	2	0	2	0	1
Massachusetts	2	0	2	0	0
Michigan	1	0	1	0	0
Minnesota	1	5	6	0	6
Mississippi	25	13	38	5	5
Missouri	2	2	4	1	3
Montana	2	2	4	0	0
Nebraska	18	51	69	1	19
Nevada	2	0	2	0	0
New Jersey	1	2	3	0	0
New Mexico	5	2	7	0	3
New York	5	8	13	0	5
North Dakota	11	6	17	1	1
Ohio	5	1	6	1	0
Oklahoma	5	7	12	0	7
Pennsylvania	4	1	5	0	2
South Carolina	2	0	2	0	2
South Dakota	10	35	45	0	0
Tennessee	5	1	6	0	1
Texas	82	42	124	1	42
Utah	0	1	1	0	0
Virginia	2	1	3	0	1
Washington	5	3	8	0	2
West Virginia	0	0	0	0	2
Wisconsin	3	2	5	1	10
Wyoming	0	5	5	0	0
Totals	**544**	**435**	**979**	**34**	**202**

*Includes confirmed and probable cases

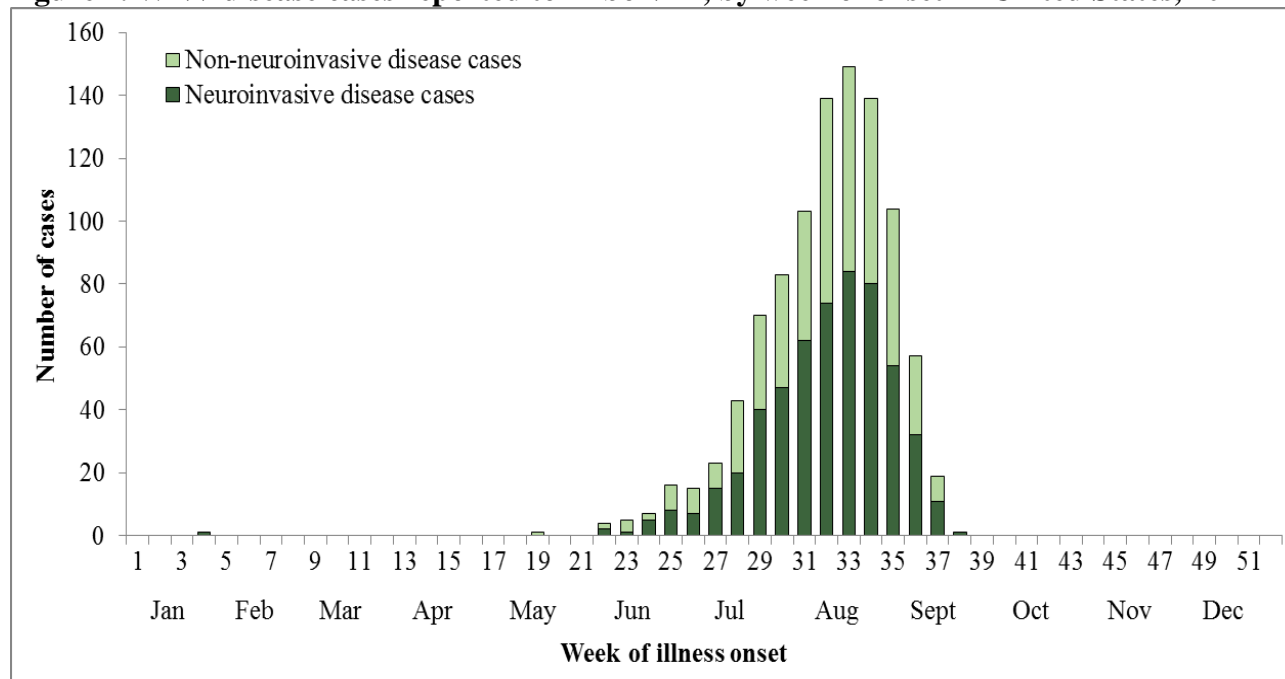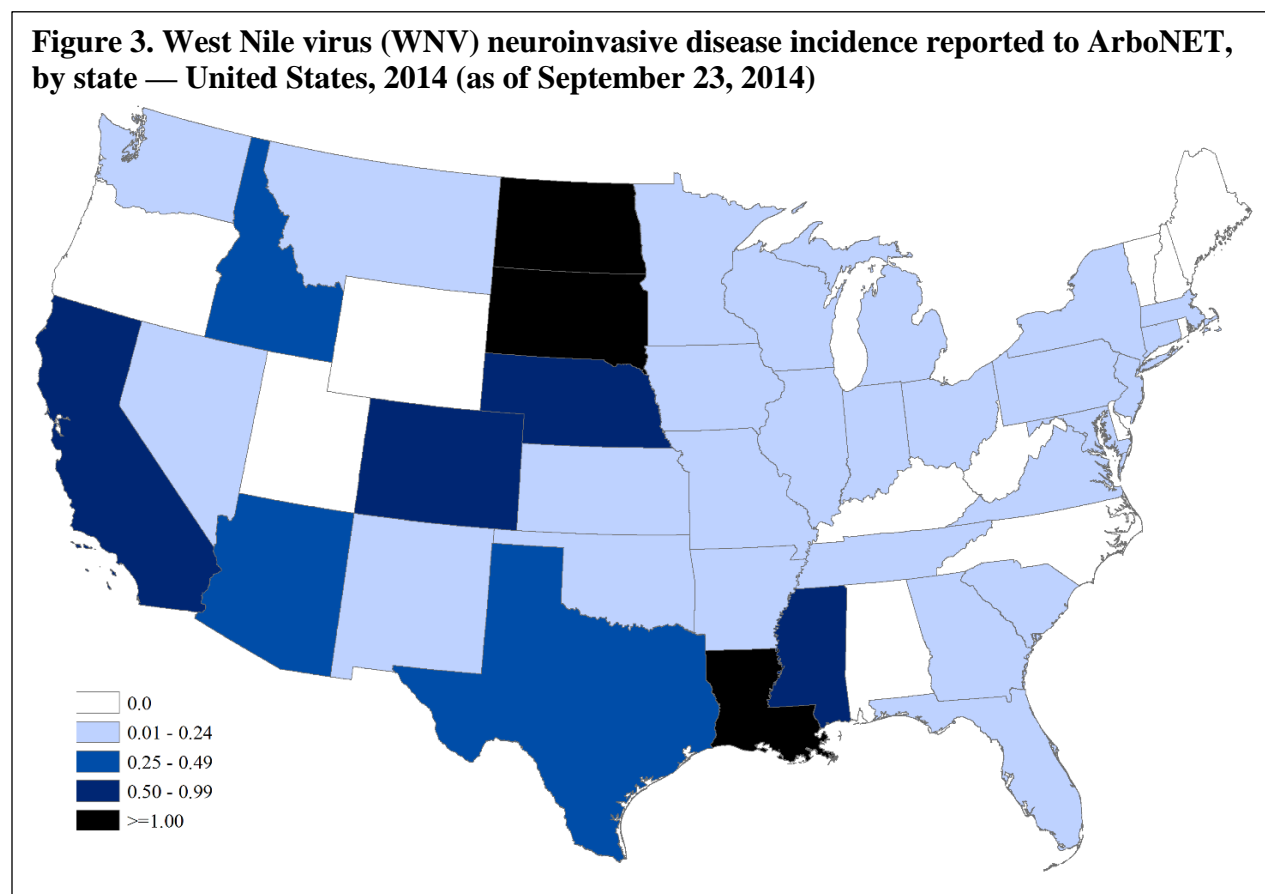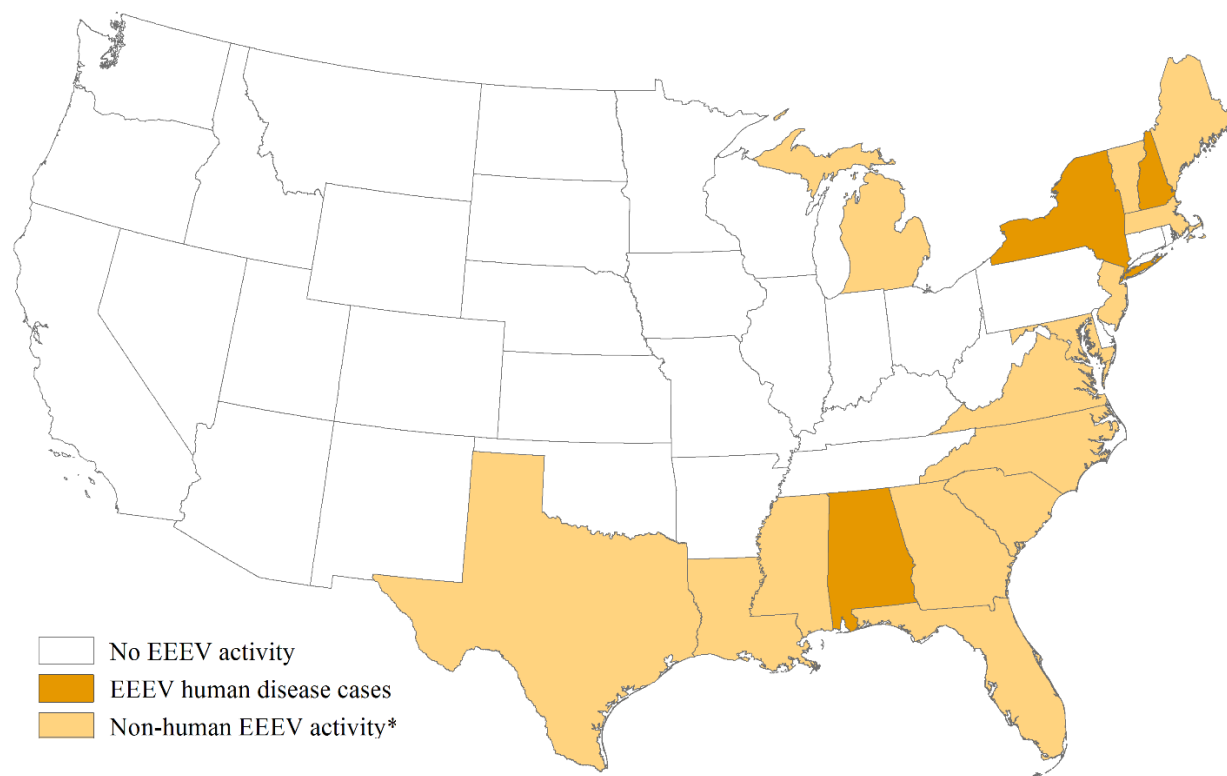**Figure 2. WNV disease cases reported to ArboNET, by week of onset — United States, 2014**

Figure 3. West Nile virus (WNV) neuroinvasive disease incidence reported to ArboNET, by state — United States, 2014 (as of September 23, 2014)

Eastern equine encephalitis virus (EEEV) activity in 2014

As of September 23rd, four counties in three states have reported human cases of EEEV disease to ArboNET for 2014 **[Figure 4 and Table 2].** Fourteen states have reported EEEV activity in non-human species only.

Figure 4. Eastern equine encephalitis virus (EEEV) activity reported to ArboNET, by state — United States, 2014 (as of September 23, 2014)

No EEEV activity
EEEV human disease cases
Non-human EEEV activity*

*EEEV veterinary disease cases, or infections in mosquitoes, birds, or sentinel animals

Table 2. Eastern equine encephalitis virus (EEEV) human disease cases reported to ArboNET, United States, 2014
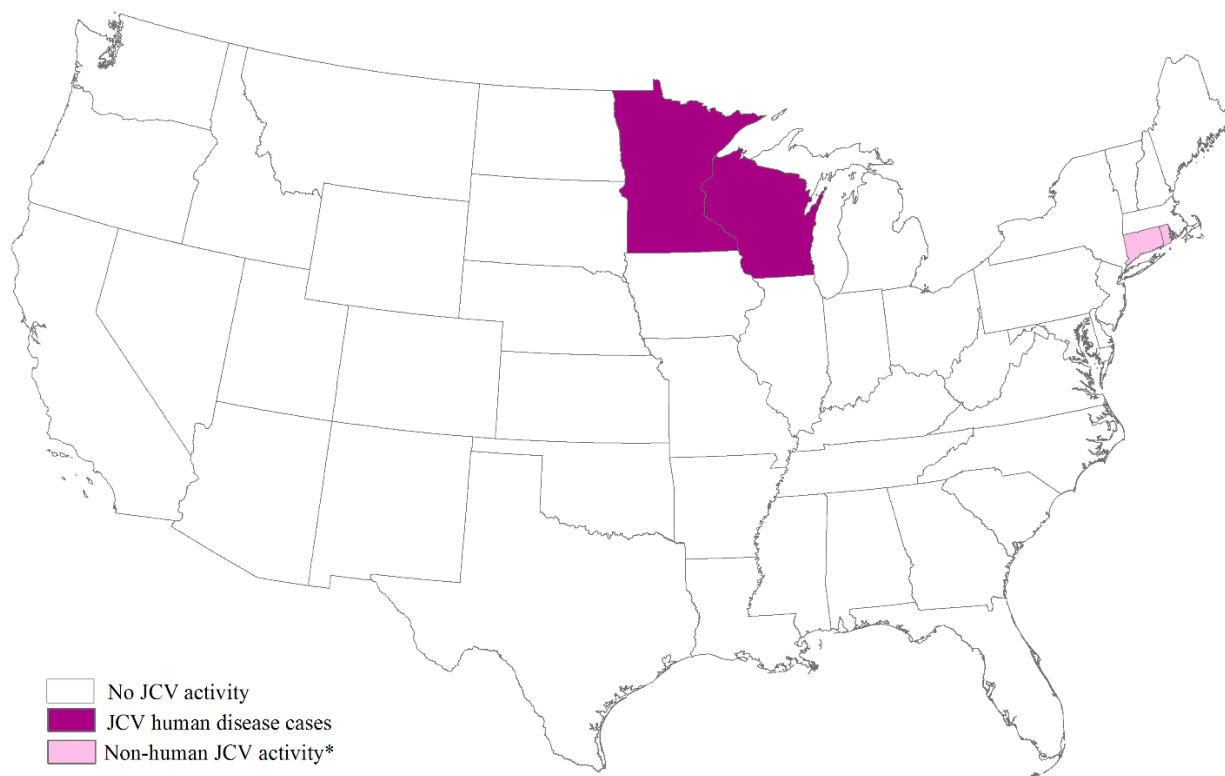
	Neuroinvasive disease cases	Nonneuroinvasive disease cases	Total cases*	Deaths
Alabama	1	0	1	0
New Hampshire	2	0	2	0
New York	1	0	1	0
Totals	**4**	**0**	**4**	**0**

*Includes confirmed and probable cases.

Jamestown Canyon virus (JCV) activity in 2014

As of September 23rd, three counties in two states have reported human cases of JCV disease to ArboNET for 2014 **[Figure 5 and Table 3].** Two states have reported JCV activity in non-human species only.

Figure 5. Jamestown Canyon virus (JCV) activity reported to ArboNET, by state — United States, 2014 (as of September 23, 2014)

☐ No JCV activity
■ JCV human disease cases
■ Non-human JCV activity*

*JCV veterinary disease cases, or infections in mosquitoes, birds, or sentinel animals

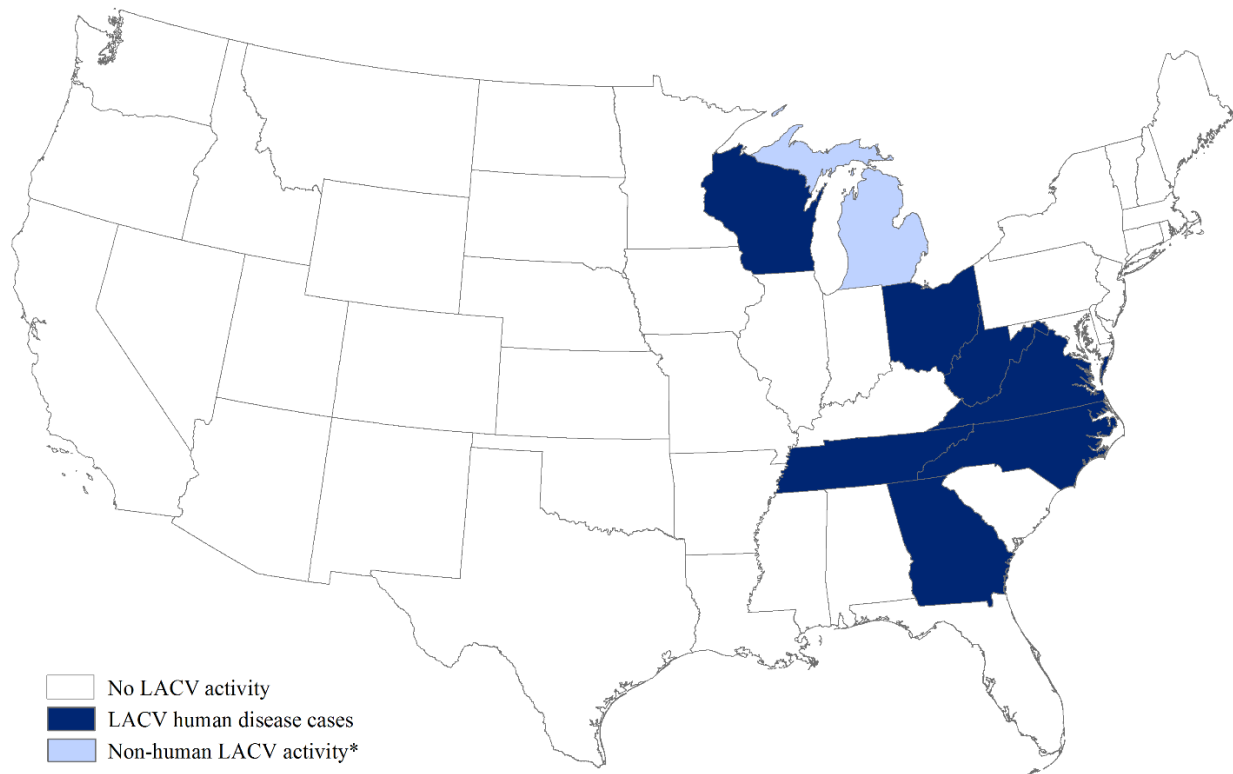**Table 3. Jamestown Canyon virus (JCV) human disease cases reported to ArboNET, United States, 2014**

	Neuroinvasive disease cases	Nonneuroinvasive disease cases	Total cases*	Deaths
Minnesota	1	0	1	0
Wisconsin	1	1	2	0
Totals	**2**	**1**	**3**	**0**

*Includes confirmed and probable cases.

La Crosse virus (LACV) activity in 2014

As of September 23rd, 24 counties in seven states have reported human cases of LACV disease to ArboNET for 2014 **[Figure 6 and Table 4].** Michigan has reported LACV activity in non-human species only. Additional demographic and clinical characteristics of reported cases are provided [**Table 6**].

Figure 6. La Crosse virus (LACV) activity reported to ArboNET, by state — United States, 2014 (as of September 23, 2014)

No LACV activity
LACV human disease cases
Non-human LACV activity*

*LACV veterinary disease cases, or infections in mosquitoes, birds, or sentinel animals

Table 4. La Crosse virus (LACV) human disease cases reported to ArboNET, United States, 2014

	Neuroinvasive disease cases	Nonneuroinvasive disease cases	Total cases*	Deaths
Georgia	0	1	1	0
North Carolina	5	0	5	0
Ohio	11	1	12	0
Tennessee	6	0	6	0
Virginia	1	0	1	0
West Virginia	1	0	1	0
Wisconsin	1	0	1	0
Totals	**25**	**12**	**27**	**0**

*Includes confirmed and probable cases.

Powassan virus (POWV) activity in 2014

As of September 23rd, three counties in two states have reported human cases of POWV disease to ArboNET for 2014 **[Figure 7 and Table 5]**.

Figure 7. Powassan virus (POWV) activity reported to ArboNET, by state — United States, 2014 (as of September 23, 2014)
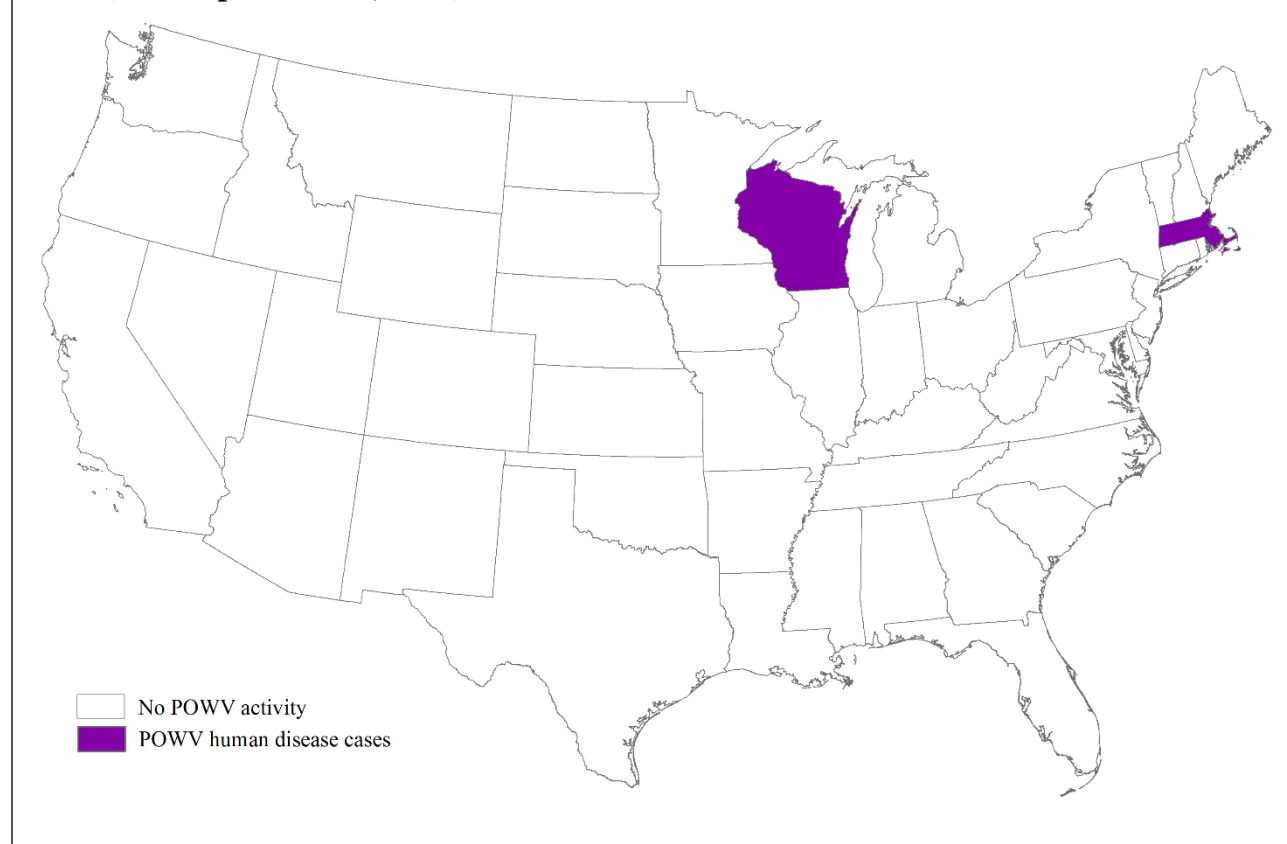

No POWV activity
POWV human disease cases

Table 5. Powassan virus (POWV) human disease cases reported to ArboNET, United States, 2014

	Neuroinvasive disease cases	Nonneuroinvasive disease cases	Total cases*	Deaths
Massachusetts	2	0	2	0
Wisconsin	1	0	1	0
Totals	**3**	**0**	**3**	**0**

*Includes confirmed and probable cases.

St. Louis encephalitis virus (SLEV) activity in 2014

As of September 23rd, three counties in three states have reported human cases of SLEV disease to ArboNET for 2014 **[Figure 8 and Table 6]**. Four states have reported SLEV activity in non-human species only.

Figure 8. St. Louis encephalitis virus (SLEV) activity reported to ArboNET, by state — United States, 2014 (as of September 23, 2014)

No SLEV activity
SLEV human disease cases
Non-human SLEV activity*
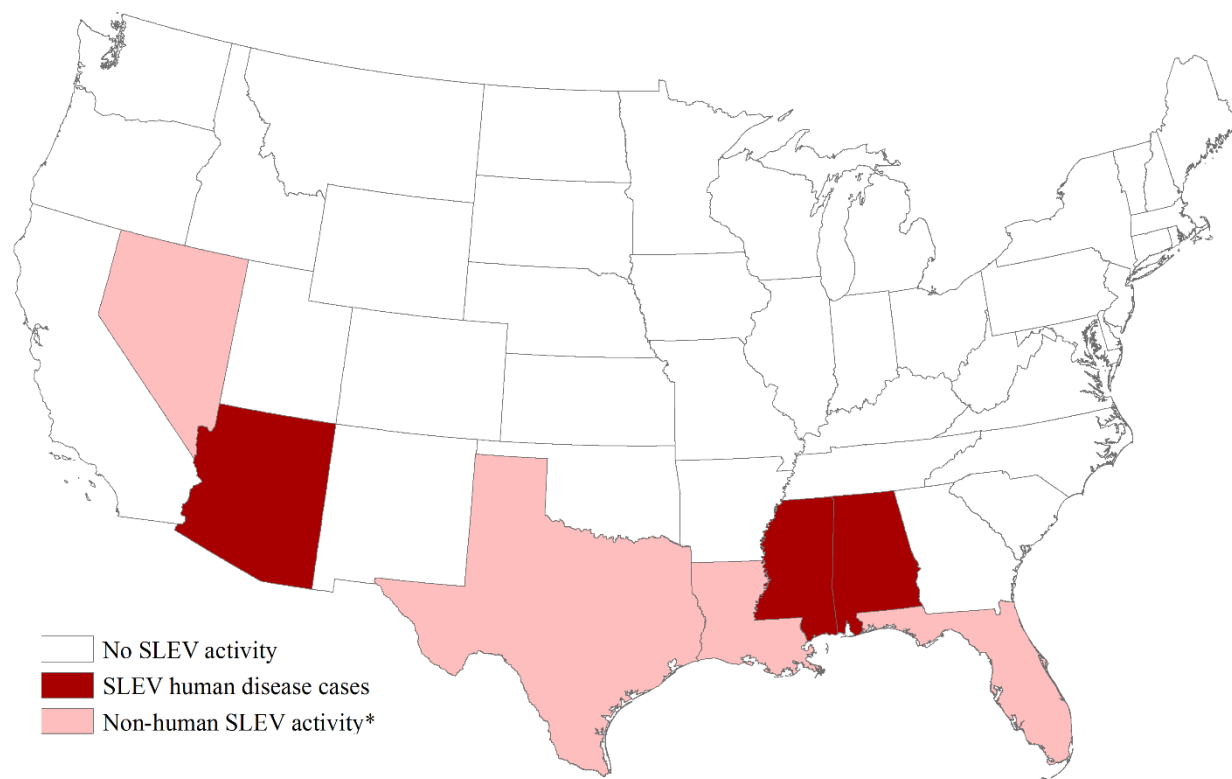
*SLEV veterinary disease cases, or infections in mosquitoes, birds, or sentinel animals

Table 6. St. Louis encephalitis virus (SLEV) human disease cases reported to ArboNET, United States, 2014

	Neuroinvasive disease cases	Nonneuroinvasive disease cases	Total cases*	Deaths
Alabama	1	0	1	0
Arizona	0	1	1	0
Mississippi	1	0	1	0
Totals	**2**	**1**	**3**	**0**

*Includes confirmed and probable cases.

Table 7. Characteristics of reported cases of arboviral disease, United States, 2014

	LAC N=27		WNV N=979	
	No.	(%)	No.	(%)
Age group				
<20 years	26	(96)	48	(5)
20-39 years	0	(0)	179	(18)
40-49 years	0	(0)	132	(13)
50-59 years	0	(0)	211	(22)
≥60 years	1	(4)	408	(42)
Unspecified	0	(0)	1	(<1)
Male sex	13	(48)	611	(62)
Onset of illness				
January	0	(0)	1	(<1)
February	0	(0)	0	(0)
March	1	(4)	0	(0)
April	0	(0)	0	(0)
May	0	(0)	5	(1)
June	1	(4)	46	(5)
July	14	(51)	275	(28)
August	10	(37)	586	(59)
September	1	(4)	66	(7)
Clinical syndrome				
Nonneuroinvasive	2	(7)	435	(44)
Neuroinvasive				
Encephalitis	19	(71)	253	(26)
Meningitis	6	(22)	235	(24)
Acute flaccid paralysis[†]	0	(0)	46	(5)
Other neuroinvasive presentation	0	(0)	10	(1)
Outcome				
Hospitalization	26	(96)	664	(68)
Death	0	(0)	34	(4)

LAC=La Crosse virus; WNV=West Nile virus

† Thirty three WNV disease cases classified as acute flaccid paralysis also had encephalitis or meningitis.

About ArboNET

ArboNET is a national arboviral surveillance system managed by CDC and state health departments. In addition to human disease, ArboNET maintains data on arboviral infections among presumptive viremic blood donors (PVDs), veterinary disease cases, mosquitoes, dead birds, and sentinel animals. As with other national surveillance data, ArboNET data has several limitations that should be considered in analysis, interpretation, and reporting **[Box]**.

Box: Limitations of ArboNET data

The following should be considered in the analysis, interpretation, and reporting of ArboNET data:

1. ArboNET is a passive surveillance system. It is dependent on clinicians considering the diagnosis of an arboviral disease and obtaining the appropriate diagnostic test, and reporting of laboratory-confirmed cases to public health authorities. Diagnosis and reporting are incomplete, and the incidence of arboviral diseases is underestimated.

2. Reported neuroinvasive disease cases are considered the most accurate indicator of arboviral activity in humans because of the substantial associated morbidity. In contrast, reported cases of nonneuroinvasive arboviral disease are more likely to be affected by disease awareness and healthcare-seeking behavior in different communities and by the availability and specificity of laboratory tests performed. Surveillance data for nonneuroinvasive disease should be interpreted with caution and generally should not be used to make comparisons between geographic areas or over time.

Additional resources

For additional arboviral disease information and data, please visit the following websites:

- CDC's Division of Vector-Borne Diseases:
  http://www.cdc.gov/ncezid/dvbd/

- National Notifiable Diseases Surveillance System:
  http://wwwn.cdc.gov/NNDSS/script/casedef.aspx?CondYrID=616&DatePub=1/1/2011%2012:00:00%20AM

- U.S. Geological Survey (USGS):
  http://diseasemaps.usgs.gov/

- AABB (American Association of Blood Banks):
  http://www.aabb.org/research/hemovigilance/Pages/wnv.aspx